Ecological site R034BY240UT
Semidesert Silt Loam (Winterfat)

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Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

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Approved by	Kirt Walstad
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** None to Very Rare. Very minor rill development may be evident following significant thunderstorm or snow melt events. The presence of rills may also be more apparent where run-on from adjacent upland sites or exposed bedrock concentrate flows. Any rill development present should be less than 1 inch deep, moderately short (< 5') and spaced 8 to 10 feet apart.

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2. **Presence of water flow patterns:** A few stable overland flow patterns wind around plant bases but show no evidence of current deposition. Flow patterns are normally 15 to 20 feet long, follow natural contours, and are typically spaced at least 10 to 15 feet apart. A slight increased flow activity may be observed immediately following significant weather events such as thunderstorms or spring run-off events.

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3. **Number and height of erosional pedestals or terracettes:** None. There should be no evidence of pedestals or terracettes caused by accelerated water erosion. One to 2 inches of elevational mounding under winterfat and four-wing saltbush canopies, and within biological soil crusts, is normal for this site and is not be caused by water erosion. There are no exposed roots around perennial grasses and shrubs.

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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare ground ranges from 50% - 60%. Bare ground openings should not be greater than 2 to 3 feet in diameter and should not be connected.

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5. **Number of gullies and erosion associated with gullies:** None at site level. Scattered landscape level gully channels, however, are a normal component of desert environments. Where landscape gullies are present, they should be stable, partially vegetated on their sides and bottoms, with no evidence of head-cutting. Some slight increase on disturbance may be evident following significant weather events or when gullies convey considerable runoff from higher elevation rocky or naturally eroding areas.

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6. **Extent of wind scoured, blowouts and/or depositional areas:** Very minor evidence of wind generated soil movement may be present. Slight depositional mounding within perennial grass crowns, under winterfat and four-wing saltbush canopies, and within biological soil crusts is normal fof this site.

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7. **Amount of litter movement (describe size and distance expected to travel):** The majority of litter accumulates in place at the base of plants canopies. Slight movement of the finest material (< 1/8 inch) may move 1 to 2 feet in the direction of prevailing winds or down slope if being transported by water. Little accumulation is observed behind obstructions.

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8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** This site should have a soil stability rating of 4 or 5 under plant canopies, and a 3 to 5 in the interspaces. Average should be a 4. Surface textures are typically silt loams and loams containing very few coarse fragments.

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** (Mikim) Soil surface is typically 0 to 3 inches deep. Texture is a loam and structure is strong medium platy. The A-horizon color is brown (10YR 4/3). Soils have an Ochric epipedon that extends 9 inches into the soil profile. The A horizon is normally deeper and better developed under plant canopies.

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Healthy stands of perennial grasses and shrubs, as well as the presents of biological crusts, provide for good infiltration, help break raindrop impact, and reduce runoff from storm events. Bare spaces are expected to be fairly small (< 3 feet) should be irregular in shape and usually not connected. Vegetative structure is adequate to capture snow and and allow snowmelt to occur in a controlled manner.

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11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** None. Soils are deep to very deep. An increase in clay content within the soil profile should not be mistaken for a compaction layer.

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12. **Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):**

    Dominant: Sprouting shrubs (winterfat, four-wing saltbush >> Perennial bunchgrasses (Indian ricegrass, bottlebrush squirreltail) > Perennial forbs (scarlet globemallow).

    Sub-dominant: Non-sprouting shrubs (bud sage, shadscale) > Rhizomatous grasses (Western wheatgrass) > = Warm season grasses (James galleta, blue grama).

Other: A wide variety of other grasses and both perennial and annual forbs can be expected to occur in the plant community.

Additional: Moss and lichen communities will normally be found under plant canopies while the cyanobacteria may be found throughout the site. Functional/structural groups may appropriately contain non-native species if their ecological function is the same as the native species. Perennial and annual forbs can be expected to vary widely in their expression in the plant community based upon departures from average growing conditions.

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** All age classes of perennial grasses should be present during years with average to above-average precipitation, there should be very little recent mortality or decadence apparent in either the shrubs or grasses. During severe (multi-year) drought or insect infestations up to 20% of the winterfat may die. There may be partial mortality of individual bunchgrasses and other shrubs during severe drought.

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14. **Average percent litter cover (%) and depth (in):** Litter cover ranges from 10 to 20% with a spike when Bud Sage drops its leaves. Depth should be 0 to 1 leaf thickness in the interspaces and from ½ - ¾ inches under perennial plant canopies.

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** Annual production in air-dry herbage should be approximately 550 to 600 pounds per acre on an average year. Production could vary from 400 to 800 pounds per acre during drought or above-average years.

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16. **Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site:** Russian thistle, annual bromes and halogeton are most likely to invade this site.

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17. **Perennial plant reproductive capability:** All perennial plant species have the ability to reproduce in most years except drought years. There are no restrictions on either seed or vegetative reproduction. Some seedling recruitment of major species may be present during average or above average years.